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- GRAY SCALE DOCUMENTS

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GenCore version 5.1.6


OM protein - protein search, using sw model

Run on: June 18, 2003, 03:16:37 ; Search time 39.4567 Seconds
(without alignments)
1215.770 Million cell updates/sec

Title: US-09-807-933B-5
Perfect score: 1956
Sequence: 1 MKFLTIASSAILALAVGTEM.....TYKQVTCPKAITAKSGCSRK 360

Scoring table: BLOSUM62
Gapop 10.0 , Gapext 0.5

Searched: 908470 seqs, 133250620 residues

Total number of hits satisfying chosen parameters: 908470

Minimum DB seq length: 0
Maximum DB seq length: 2000000000

Post-processing: Minimum Match 0%
Maximum Match 100%
Listing first 45 summaries

Database : A_Geneseq_101002:*
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2: /SIDS2/gcgdata/geneseq/geneseqp-embl/AA1981.DAT:*
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22: /SIDS2/gcgdata/geneseq/geneseqp-embl/AA2001.DAT:*
23: /SIDS2/gcgdata/geneseq/geneseqp-embl/AA2002.DAT:*

Pred. No. is the number of results predicted by chance to have a score greater than or equal to the score of the result being printed, and is derived by analysis of the total score distribution.

SUMMARIES

| Result No. | Score | % Query Match | Length | DB | ID | Description |
|---|---|---|---|---|---|---|
| 1 | 1956 | 100.0 | 360 | 21 | AAB09823 | Endoglucanase prot |
| 2 | 1956 | 100.0 | 360 | 23 | AAO15054 | Rhizopus arrhizus |
| 3 | 1956 | 100.0 | 360 | 23 | ABB08062 | R. oryzae CP96001 |
| 4 | 1404 | 71.8 | 338 | 21 | AAB09821 | Endoglucanase prot |
| 5 | 1404 | 71.8 | 338 | 23 | AAO15052 | Rhizopus arrhizus |
| 6 | 1404 | 71.8 | 338 | 23 | ABB08060 | R. oryzae CP96001 |
| 7 | 1332 | 68.1 | 366 | 21 | AAB09822 | Endoglucanase prot |
| 8 | 1332 | 68.1 | 366 | 23 | AAO15053 | Rhizopus arrhizus |
| 9 | 1332 | 68.1 | 366 | 23 | ABB08061 | R. oryzae CP96001 |
| 10 | 1209 | 61.8 | 338 | 21 | AAB09824 | Endoglucanase prot |
| 11 | 1209 | 61.8 | 338 | 23 | AAO15055 | Rhizopus arrhizus |
| 12 | 1209 | 61.8 | 338 | 23 | ABB08063 | M. circinelloides |
| 13 | 1195.5 | 61.1 | 387 | 21 | AAB09825 | Endoglucanase prot |
| 14 | 1195.5 | 61.1 | 387 | 23 | AAO15056 | Rhizopus arrhizus |
| 15 | 1195.5 | 61.1 | 387 | 23 | ABB08064 | M. circinelloides |
| 16 | 1194 | 61.0 | 346 | 21 | AAB09826 | Endoglucanase prot |
| 17 | 1194 | 61.0 | 346 | 23 | AAO15057 | Phycomyces nitens |
| 18 | 1194 | 61.0 | 346 | 23 | ABB08065 | P. nitens CP99002 |
| 19 | 1067.5 | 54.6 | 245 | 23 | AAO15063 | Endoglucanase-rela |
| 20 | 1005.5 | 51.4 | 228 | 23 | AAO15062 | Endoglucanase-rela |
| 21 | 754 | 38.5 | 225 | 21 | AAY84798 | Amino acid sequenc |
| 22 | 754 | 38.5 | 225 | 22 | ABB05057 | Chrysosporium C1 s |
| 23 | 747 | 38.2 | 225 | 17 | AAW04925 | Cellulytic enzyme |
| 24 | 747 | 38.2 | 297 | 17 | AAW04933 | Chimeric endogluca |
| 25 | 747 | 38.2 | 308 | 17 | AAW04934 | Chimeric endogluca |
| 26 | 745 | 38.1 | 299 | 17 | AAW04928 | Cellulytic enzyme |
| 27 | 745 | 38.1 | 299 | 19 | AAW63624 | Monocomponent endo |
| 28 | 740 | 37.8 | 200 | 19 | AAW53979 | Thielavia terrestr |
| 29 | 736 | 37.6 | 306 | 19 | AAW44270 | Hybrid DNA protein |
| 30 | 735 | 37.6 | 204 | 19 | AAW53970 | Myceliophthora the |
| 31 | 732 | 37.4 | 200 | 19 | AAW53968 | Thielavia terrestr |
| 32 | 731.5 | 37.4 | 223 | 23 | AAO15070 | Humicola insolens |
| 33 | 731.5 | 37.4 | 223 | 23 | AAG80602 | Humicola insolens |
| 34 | 724 | 37.0 | 200 | 19 | AAW53967 | Sordaria fimicola |
| 35 | 722.5 | 36.9 | 376 | 12 | AAR15272 | Fusarium oxysporum |
| 36 | 722.5 | 36.9 | 376 | 13 | AAR25527 | Fusarium oxysporum |
| 37 | 722.5 | 36.9 | 376 | 13 | AAR25466 | Endoglucanase #2. |
| 38 | 722.5 | 36.9 | 376 | 13 | AAR25429 | Cellulase containe |
| 39 | 722.5 | 36.9 | 376 | 13 | AAR27969 | Endoglucanase enzy |
| 40 | 722.5 | 36.9 | 376 | 14 | AAR42064 | Endoglucanase enzy |
| 41 | 722.5 | 36.9 | 376 | 16 | AAY67389 | F. oxysporum endog |
| 42 | 722.5 | 36.9 | 376 | 19 | AAW46617 | Fusarium oxysporum |
| 43 | 716.5 | 36.6 | 376 | 14 | AAR37151 | Dye transfer inhib |
| 44 | 713 | 36.5 | 202 | 19 | AAW53969 | Fusarium oxysporum |
| 45 | 712 | 36.4 | 357 | 15 | ABB04127 | Fusarium oxysporum |

ALIGNMENTS

RESULT 1
AAB09823
ID AAB09823 standard; Protein; 360 AA.
XX
AC AAB09823;
XX
DT 25-SEP-2000 (first entry)
XX
DE Endoglucanase protein sequence 3.
XX
KW Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KW animal foodstuff.
XX
OS Rhizopus oryzae
XX
PN WO200024879-A1.
XX
PD 04-MAY-2000.
XX
PF 25-OCT-1999; 99WO-JP05884.
XX
PR 23-OCT-1998; 98JP-0302387.
XX
PA (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
XX
DR WPI; 2000-365117/31.
DR N-PSDB; AAA62728.
XX
PT Endoglucanases of fungal origin with high activity under alkaline
PT conditions for production of paper pulp and animal feedstuffs -

XX
PS Claim 44; Page 115-117; 180pp; Japanese.
XX
CC This sequence represents an endoglucanase protein. The invention relates
CC to an endoglucanase of fungal origin which can completely break down
CC purified cellulose at a concentration of less than 1mg protein/litre,
CC and produces more than 50% breakdown of cellulose at pH 8.5. The
CC invention includes endoglucanase protein sequences (see
CC AAB09825-B09830), endoglucanase nucleotide sequences (see
CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC identification of the endoglucanase sequences, and in the construction of
CC vectors containing the polynucleotides. The endoglucanase enzymes are
CC used for the production of pulp for papermaking and for the production of
CC animal foodstuffs.
XX
SQ Sequence 360 AA;

Query Match 100.0%; Score 1956; DB 21; Length 360;
Best Local Similarity 100.0%; Pred. No. 2.6e-130;
Matches 360; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Db    1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60

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Qy  121 KKTTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180
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Qy  241 CFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTDG 300
Db  241 CFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTDG 300

Qy  301 WGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSRK 360
Db  301 WGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSRK 360
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RESULT 2
AAO15054
ID AAO15054 standard; Protein; 360 AA.
XX
AC AAO15054;
XX
DT 22-AUG-2002 (first entry)
XX
DE Rhizopus arrhizus endoglucanase-related protein 3.
XX
KW Zygomycetes-originated endoglucanase; cellulose binding domain;
KW fibre processing; waste paper de-inking; paper pulp.
XX
OS Rhizopus arrhizus.
XX
PN WO200242474-A1.
XX
PD 30-MAY-2002.
XX
PF 21-NOV-2001; 2001WO-JP10188.
XX
PR 21-NOV-2000; 2000JP-0354296.
XX
PA (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakane A, Baba Y, Koga J, Kubota H;
XX
DR WPI; 2002-471729/50.
DR N-PSDB; AAL43246.
XX
PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT with effect of endoglucanase activity enhanced in processing fibers,
PT deinking waste paper and improving freeness of paper pulp -
XX
PS Claim 5; Page 63-65; 109pp; Japanese.
XX
CC The invention comprises the amino acid and coding sequences of
CC zygomycetes-originated endoglucanase enzymes lacking the cellulose
CC binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC invention have enhanced endoglucanase activity. The zygomycetes-
CC originated endoglucanase enzymes of the invention are useful for
CC processing fibres, de-inking waste paper and improving the freeness of
CC paper pulp - which is particularly applicable in detergent compositions.
CC The present amino acid sequence represents an endoglucanase-related
CC protein of the invention.
XX
SQ Sequence 360 AA;

Query Match 100.0%; Score 1956; DB 23; Length 360;
Best Local Similarity 100.0%; Pred. No. 2.6e-130;
Matches 360; Conservative 0; Mismatches 0; Indels 0; Gaps 0;

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Qy   61 QCVPNENLTSTNKSSHKTTTTESAKKTTTTKGSKKTTTTEASKKTTTTEASKKTTTTEAS 120
Db   61 QCVPNENLTSTNKSSHKTTTTESAKKTTTTKGSKKTTTTEASKKTTTTEASKKTTTTEAS 120

Qy  121 KKTTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180
Db  121 KKTTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180

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Db  181 VGSCNKDGKTLADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFAAASISGGSEATWCCA 240

Qy  241 CFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTDG 300
Db  241 CFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTDG 300

Qy  301 WGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSRK 360
Db  301 WGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSRK 360
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RESULT 3
ABB08062
ID ABB08062 standard; protein; 360 AA.
XX
AC ABB08062;
XX
DT 27-AUG-2002 (first entry)
XX
DE R. oryzae CP96001 RCEIII protein.
XX
KW Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;
KW pulp treatment; RCEIII.
XX
OS Rhizopus oryzae.
XX
FH Key Location/Qualifiers
FT Peptide 1..23
FT /note= "signal peptide"
FT Protein 24..360
FT /note= "mature protein"
XX
PN WO200238754-A1.
XX

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PD   16-MAY-2002.
XX
PF   12-NOV-2001; 2001WO-JP09858.
XX
PR   10-NOV-2000; 2000JP-0343921.
XX
PA   (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI   Koga J,  Nakane A,  Baba Y,  Kono T;
XX
DR   WPI; 2002-471555/50.
XX
PT   Cellulase preparations containing transconjugant-originated
PT   endoglucanase and non-ionic surfactants, useful in detergent
PT   compositions, in treating cellulose fibers and deinking waste paper and
PT   improving freeness of paper pulp  -
XX
PS   Claim 3; Page 25-27; 38pp; Japanese.
XX
CC   The invention relates to a cellulase preparation comprising a
CC   transconjugant-originated endoglucanase and a non-ionic surfactant. The
CC   endoglucanase is selected from RCEI, RCEII, RCEII, MCEI, MCEII or PCEI
CC   proteins. The preparations are useful in detergent compositions, in
CC   treating cellulose fibers and deinking waste paper and improving the
CC   freeness of paper pulp. The fibers treated by the preparations have
CC   reduced feathering and improved skin-feel and appearance with colour
CC   clarification, local change in colour and softening, and after deinking
CC   and paper pulp treatment, there is an improvement on freeness of the
CC   paper pulp. This treatment with the cellulase preparation can be operated
CC   at significantly lower cost. The present sequence represents the
CC   R. oryzae CP96001 RCEIII protein.
XX
SQ   Sequence   360 AA;

  Query Match             100.0%;  Score 1956;  DB 23;  Length 360;
  Best Local Similarity   100.0%;  Pred. No. 2.6e-130;
  Matches  360;  Conservative    0;  Mismatches    0;  Indels    0;  Gaps    0;

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Db          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60

Qy         61 QCVPNENLTSTNKSSHKTTTTESAKKTTTTKGSKKTTTTEASKKTTTTEASKKTTTTEAS 120
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Qy        121 KKTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180
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Qy        181 VGSCNKDGKTLADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFAAASISGGSEATWCCA 240
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Qy        241 CFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTDG 300
              ||||||||||||||||||||||||||||||||||||||||||||||||||||||||||||
Db        241 CFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTDG 300

Qy        301 WGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSRK 360
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Db        301 WGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSRK 360


RESULT 4
AAB09821
ID   AAB09821 standard; Protein; 338 AA.
XX
AC   AAB09821;
XX
DT   25-SEP-2000  (first entry)
XX
DE   Endoglucanase protein sequence 1.
XX
KW   Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KW   animal foodstuff.
XX
OS   Rhizopus oryzae.
XX
PN   WO200024879-A1.
XX
PD   04-MAY-2000.
XX
PF   25-OCT-1999;   99WO-JP05884.
XX
PR   23-OCT-1998;   98JP-0302387.
XX
PA   (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI   Nakamura Y,  Moriya T,  Baba Y,  Yanai K,  Sumida N,  Nishimura T;
PI   Murashima K,  Nakane A,  Yaguchi T,  Koga J,  Murakami T,  Kono T;
XX
DR   WPI; 2000-365117/31.
DR   N-PSDB; AAA62726.
XX
PT   Endoglucanases of fungal origin with high activity under alkaline
PT   conditions for production of paper pulp and animal feedstuffs  -
XX
PS   Claim 44; Page 106-108; 180pp; Japanese.
XX
CC   This sequence represents an endoglucanase protein. The invention relates
CC   to an endoglucanase of fungal origin which can completely break down
CC   purified cellulose at a concentration of less than 1mg protein/litre,
CC   and produces more than 50% breakdown of cellulose at pH 8.5. The
CC   invention includes endoglucanase protein sequences (see
CC   AAB09825-B09830), endoglucanase nucleotide sequences (see
CC   AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC   identification of the endoglucanase sequences, and in the construction of
CC   vectors containing the polynucleotides. The endoglucanase enzymes are
CC   used for the production of pulp for papermaking and for the production of
CC   animal foodstuffs.
XX
SQ   Sequence   338 AA;

  Query Match             71.8%;  Score 1404;  DB 21;  Length 338;
  Best Local Similarity   73.7%;  Pred. No. 2.3e-91;
  Matches  266;  Conservative   32;  Mismatches   39;  Indels   24;  Gaps    7;

Qy          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60
              |||:||||||:||||:||||| |||||| | ||||||||:||||||||||     | :||
Db          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTC--KVSNDYYS 58

Qy         61 QCVPNENLTSTNKSSHKTTTTESAKKTTTTKGSKKTTTTEASKKTTTTEASKKTTTTEAS 120
              ||:|:   :| ||||      ||| | |||   |||||           | |||||  |
Db         59 QCLPSG--SSGNKSS------ESAHKKTTTAAHKKTTTA----------AHKKTTTAPAK 100

Qy        121 KKTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180
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Db        101 K--TTTVAKAST-PSNSSSSSSGKYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSP 157

Qy        181 VGSCNKDGKT-LADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFAAASISGGSEATWCC 239
              | |||||| | |:|:| |:|| ||:|| ||||||| |:|:|||||||:|||| |: |||
Db        158 VKSCNKDGVTALSDSNAQSGCNGGNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCC 217

Qy        240 ACPELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTD 299
              :|||||||||:| ||||||||||| ||||:|||||||||||||||:|||::||||| |
Db        218 SCPELTFTSTSVAGKKMVVQVTNTGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPND 277

Qy        300 GWGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSR 359
              |||:||||:|||||||:|||||||||||| ||||||||:||||:||||  ||||:||||
Db        278 GWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSR 337

Qy        360 K 360
              |
Db        338 K 338
```

```
RESULT 5
AAO15052
ID   AAO15052 standard; Protein; 338 AA.
XX
AC   AAO15052;
XX
DT   22-AUG-2002  (first entry)
XX
DE   Rhizopus arrhizus endoglucanase-related protein 1.
XX
KW   Zygomycetes-originated endoglucanase; cellulose binding domain;
KW   fibre processing; waste paper de-inking; paper pulp.
XX
OS   Rhizopus arrhizus.
XX
PN   WO200242474-A1.
XX
PD   30-MAY-2002.
XX
PF   21-NOV-2001; 2001WO-JP10188.
XX
PR   21-NOV-2000; 2000JP-0354296.
XX
PA   (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI   Nakane A,  Baba Y,  Koga J,  Kubota H;
XX
DR   WPI; 2002-471729/50.
DR   N-PSDB; AAL43244, AAL43250.
XX
PT   Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT   with effect of endoglucanase activity enhanced in processing fibers,
PT   deinking waste paper and improving freeness of paper pulp  -
XX
PS   Claim 5; Page 54-55; 109pp; Japanese.
XX
CC   The invention comprises the amino acid and coding sequences of
CC   zygomycetes-originated endoglucanase enzymes lacking the cellulose
CC   binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC   invention have enhanced endoglucanase activity. The zygomycetes-
CC   originated endoglucanase enzymes of the invention are useful for
CC   processing fibres, de-inking waste paper and improving the freeness of
CC   paper pulp - which is particularly applicable in detergent compositions.
CC   The present amino acid sequence represents an endoglucanase-related
CC   protein of the invention.
XX
SQ   Sequence   338 AA;

  Query Match             71.8%;  Score 1404;  DB 23;  Length 338;
  Best Local Similarity   73.7%;  Pred. No. 2.3e-91;
  Matches  266;  Conservative   32;  Mismatches   39;  Indels   24;  Gaps    7;

Qy          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60
              |||:||||||:||||:||||| |||||| | |||||||:|||||||||||     | :||
Db          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTC--KVSNDYYS 58

Qy         61 QCVPNENLTSTNKSSHKTTTTESAKKTTTTKGSKKTTTTEASKKTTTTEASKKTTTTEAS 120
              ||:|:   :| ||||       ||| | |||   |||||           | ||||| |
Db         59 QCLPSG--SSGNKSS------ESAHKKTTTAAHKKTTTA----------AHKKTTTAPAK 100

Qy        121 KKTTTTTKKASTSTSSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180
              |  ||| ,||||  |:|||||:|  |||||||||||| |||||||| ||||||||:|:||
Db        101 K--TTTVAKAST-PSNSSSSSSGKYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSP 157

Qy        181 VGSCNKDGKT-LADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFAAASISGGSEATWCC 239
              | |||||| | |:|:| |:|| ||:|| ||||||| |:|:||||||||:|||| |: |||
Db        158 VKSCNKDGVTALSDSNAQSGCNGGNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCC 217

Qy        240 ACFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTD 299
              :|||||||||:| |||||||||||| ||||:|||||||||||||||:|||::|||||| |
Db        218 SCFELTFTSTSVAGKKMVVQVTNTGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPND 277

Qy        300 GWGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSR 359
              |||:||||:|||||||:|||||||||||| |||||||:||||||||:|||| |||:||||
Db        278 GWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSR 337

Qy        360 K 360
              |
Db        338 K 338


RESULT 6
ABB08060
ID   ABB08060 standard; protein; 338 AA.
XX
AC   ABB08060;
XX
DT   27-AUG-2002  (first entry)
XX
DE   R. oryzae CP96001 RCEI protein.
XX
KW   Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;
KW   pulp treatment; RCEI.
XX
OS   Rhizopus oryzae.
XX
FH   Key             Location/Qualifiers
FT   Peptide         1..23
FT                   /note= "signal peptide"
FT   Protein         24..338
FT                   /note= "mature protein"
XX
PN   WO200238754-A1.
XX
PD   16-MAY-2002.
XX
PF   12-NOV-2001; 2001WO-JP09858.
XX
PR   10-NOV-2000; 2000JP-0343921.
XX
PA   (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI   Koga J,  Nakane A,  Baba Y,  Kono T;
XX
DR   WPI; 2002-471555/50.
XX
PT   Cellulase preparations containing transconjugant-originated
PT   endoglucanase and non-ionic surfactants, useful in detergent
PT   compositions, in treating cellulose fibers and deinking waste paper and
PT   improving freeness of paper pulp  -
XX
PS   Claim 3; Page 21-22; 38pp; Japanese.
XX
CC   The invention relates to a cellulase preparation comprising a
CC   transconjugant-originated endoglucanase and a non-ionic surfactant. The
CC   endoglucanase is selected from RCEI, RCEII, RCEII, MCEI, MCEII or PCEI
CC   proteins. The preparations are useful in detergent compositions, in
CC   treating cellulose fibers and deinking waste paper and improving the
CC   freeness of paper pulp. The fibers treated by the preparations have
CC   reduced feathering and improved skin-feel and appearance with colour
CC   clarification, local change in colour and softening, and after deinking
CC   and paper pulp treatment, there is an improvement on freeness of the
CC   paper pulp. This treatment with the cellulase preparation can be operated
CC   at significantly lower cost. The present sequence represents the
CC   R. oryzae CP96001 RCEI protein.
XX
SQ   Sequence   338 AA;

  Query Match             71.8%;  Score 1404;  DB 23;  Length 338;
  Best Local Similarity   73.7%;  Pred. No. 2.3e-91;
  Matches  266;  Conservative   32;  Mismatches   39;  Indels   24;  Gaps    7;

Qy          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60
              |||:||||||:||||:||||| |||||| | |||||||:|||||||||||     | :||
Db          1 MKFITIASSALLALALGTEMASAAECSKLYGQCGGKNWNGPTCCESGSTC--KVSNDYYS 58
```

```
Qy          61 QCVPNENLTSTNKSSHKTTTTESAKKTTTTKGSKKTTTTEASKKTTTTEASKKTTTTEAS 120
               ||:|:   :| ||||      ||| | |||   |||||           | |||||  |
Db          59 QCLPSG--SSGNKSS------ESAHKKTTTAAHKKTTTA----------AHKKTTTAPAK 100

Qy         121 KKTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180
               |  |||  ||||  |:||||:|  |||||||||||| |||||||| ||||||||:|:||
Db         101 K--TTTVAKAST-PSNSSSSSSGKYSAVSGGASGNGVTTRYWDCCKASCSWPGKANVSSP 157

Qy         181 VGSCNKDGKT-LADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFAAASISGGSEATWCC 239
               | |||||| | |:|:| |:|| ||:|| ||||||| |:|:|||||||:|||| |: |||
Db         158 VKSCNKDGVTALSDSNAQSGCNGGNSYMCNDNQPWAVNDNLAYGFAAAAISGGGESRWCC 217

Qy         240 ACFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTD 299
               :|||||||||:| ||||||||||| ||||:|||||||||||||||:|||::||||| |
Db         218 SCFELTFTSTSVAGKKMVVQVTNTGGDLGSSTGAHFDLQMPGGGVGIFNGCSSQWGAPND 277

Qy         300 GWGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSR 359
               |||:||||:|||||||:|||||||||||| ||||||||:||||:|||| ||||:||||
Db         278 GWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYKEVTCPKEITAKTGCSR 337

Qy         360 K 360
               |
Db         338 K 338
```

RESULT 7
AAB09822
ID AAB09822 standard; Protein; 366 AA.
XX
AC AAB09822;
XX
DT 25-SEP-2000 (first entry)
XX
DE Endoglucanase protein sequence 2.
XX
KW Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KW animal foodstuff.
XX
OS Rhizopus oryzae.
XX
PN WO200024879-A1.
XX
PD 04-MAY-2000.
XX
PF 25-OCT-1999; 99WO-JP05884.
XX
PR 23-OCT-1998; 98JP-0302387.
XX
PA (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
XX
DR WPI; 2000-365117/31.
DR N-PSDB; AAA62727.
XX
PT Endoglucanases of fungal origin with high activity under alkaline
PT conditions for production of paper pulp and animal feedstuffs -
XX
PS Claim 44; Page 110-113; 180pp; Japanese.
XX
CC This sequence represents an endoglucanase protein. The invention relates
CC to an endoglucanase of fungal origin which can completely break down
CC purified cellulose at a concentration of less than 1mg protein/litre,
CC and produces more than 50% breakdown of cellulose at pH 8.5. The
CC invention includes endoglucanase protein sequences (see
CC AAB09825-B09830), endoglucanase nucleotide sequences (see
CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC identification of the endoglucanase sequences, and in the construction of
CC vectors containing the polynucleotides. The endoglucanase enzymes are
CC used for the production of pulp for papermaking and for the production of
CC animal foodstuffs.
XX

SQ Sequence 366 AA;

Query Match 68.1%; Score 1332; DB 21; Length 366;
Best Local Similarity 66.4%; Pred. No. 3.1e-86;
Matches 249; Conservative 39; Mismatches 63; Indels 24; Gaps 5;

```
Qy           1 MKFLTIASSAILALALVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60
               |||:|| |||:||||:||||| ||:||| | |||||:|:|||||||||||     | :||
Db           1 MKPITITSSALLALALGTEMASAAKCSKLYGQCGGKDWNGPTCCESGSTC--KVSNDYYS 58

Qy          61 QCVPNENLTSTNKSS-------------HKTTTTESAKKTTTTKGSKKTTTTEASKKTT 106
               ||:  |  :: ||||              :  | ||      :           |
Db          59 QCLAPE--SNGNKSSECSKLYGQCGGKDWNGPTCCESGSTCKVSNDYYSQCLAPESNGNK 116

Qy         107 TTEASKKTTTTEASKKTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCK 166
               |:|:: ||||| |  |  ||| ||| |::||       || ||||||||| |||||||||
Db         117 TSESAHKTTTTTAPAKEITTTAKASNSSSNSSG-----KYSIVSGGASGNGVTTRYWDCCK 171

Qy         167 PSCSWPGKADVTSPVGSCNKDGKT-LADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFA 225
               |||||||:|:||| |||||| | |:|:| |:|| ||:|| ||||||| |:|:||||||
Db         172 ASCSWPGKANVSSPVKSCNKDGVTALSDSNVQSGCNGGNSYMCNDNQPWAVNDNLAYGFA 231

Qy         226 AASISGGSEATWCCACFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVG 285
               ||:|||| |: |||:|||||||||:| |||||:|||||| ||||:|||||||||||||||
Db         232 AAAISGGGESRWCCSCFELTFTSTSVAGKKMVIQVTNTGGDLGSSTGAHFDLQMPGGGVG 291

Qy         286 IYNGCATQWGAPTDGWGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQV 345
               |:|||: ||||| ||||:||||:|||||||:|||||||||||||| ||||||||:||||:|
Db         292 IFNGCSKQWGAPNDGWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYKEV 351

Qy         346 TCPKAITAKSGCSRK 360
               |||| ||||:|||||
Db         352 TCPKEITAKTGCSRK 366
```

RESULT 8
AAO15053
ID AAO15053 standard; Protein; 366 AA.
XX
AC AAO15053;
XX
DT 22-AUG-2002 (first entry)
XX
DE Rhizopus arrhizus endoglucanase-related protein 2.
XX
KW Zygomycetes-originated endoglucanase; cellulose binding domain;
KW fibre processing; waste paper de-inking; paper pulp.
XX
OS Rhizopus arrhizus.
XX
PN WO200242474-A1.
XX
PD 30-MAY-2002.
XX
PF 21-NOV-2001; 2001WO-JP10188.
XX
PR 21-NOV-2000; 2000JP-0354296.
XX
PA (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakane A, Baba Y, Koga J, Kubota H;
XX
DR WPI; 2002-471729/50.
DR N-PSDB; AAL43245.
XX
PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT with effect of endoglucanase activity enhanced in processing fibers,
PT deinking waste paper and improving freeness of paper pulp -
XX
PS Claim 5; Page 58-60; 109pp; Japanese.
XX
CC The invention comprises the amino acid and coding sequences of
CC zygomycetes-originated endoglucanase enzymes lacking the cellulose

CC binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC invention have enhanced endoglucanase activity. The zygomycetes-
CC originated endoglucanase enzymes of the invention are useful for
CC processing fibres, de-inking waste paper and improving the freeness of
CC paper pulp - which is particularly applicable in detergent compositions.
CC The present amino acid sequence represents an endoglucanase-related
CC protein of the invention.
XX
SQ Sequence 366 AA;

Query Match 68.1%; Score 1332; DB 23; Length 366;
Best Local Similarity 66.4%; Pred. No. 3.1e-86;
Matches 249; Conservative 39; Mismatches 63; Indels 24; Gaps 5;

```
Qy          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60
              |||:|| |||:||||:||||| ||:||| | |||||:|:||||||||||     | :||
Db          1 MKFITITSSALLALALGTEMASAAKCSKLYGQCGGKDWNGPTCCESGSTC--KVSNDYYS 58

Qy         61 QCVPNENLTSTNKSS-------------HKTTTTESAKKTTTTKGSKKTTTTEASKKTT 106
              ||:  |  :: ||||             :  |  ||     :           |
Db         59 QCLAPE--SNGNKSSECSKLYGQCGGKDWNGPTCCESGSTCKVSNDYYSQCLAPESNGNK 116

Qy        107 TTEASKKTTTTEASKKTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCK 166
              |:|:: ||||| |  |  ||| ||| |::||       || |||||||| ||||||||
Db        117 TSESAHKTTTTTAPAKEITTTAKASNSSNSSG-----KYSIVSGGASGNGVTTRYWDCCK 171

Qy        167 PSCSWPGKADVTSPVGSCNKDGKT-LADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFA 225
              ||||||||:|:||| |||||| | |:|:| |:|| ||:|| |||||| |:|:||||||
Db        172 ASCSWPGKANVSSPVKSCNKDGVTALSDSNVQSGCNGGNSYMCNDNQPWAVNDNLAYGFA 231

Qy        226 AASISGGSEATWCCACFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVG 285
              ||:|||| |: |||:|||||||||:| |||||:|||||| ||||:|||||||||||||||
Db        232 AAAISGGGESRWCCSCFELTFTSTSVAGKKMVIQVTNTGGDLGSSTGAHFDLQMPGGGVG 291

Qy        286 IYNGCATQWGAPTDGWGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQV 345
              |:|||: ||||| |||||:||||:|||||||:||||||||||||| ||||||||:||||:|
Db        292 IFNGCSKQWGAPNDGWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYKEV 351

Qy        346 TCPKAITAKSGCSRK 360
              |||| ||||:|||||
Db        352 TCPKEITAKTGCSRK 366
```

RESULT 9
ABB08061
ID ABB08061 standard; protein; 366 AA.
XX
AC ABB08061;
XX
DT 27-AUG-2002 (first entry)
XX
DE R. oryzae CP96001 RCEII protein.
XX
KW Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;
KW pulp treatment; RCEII.
XX
OS Rhizopus oryzae.
XX
FH Key Location/Qualifiers
FT Peptide 1..23
FT /note= "signal peptide"
FT Protein 24..366
FT /note= "mature protein"
XX
PN WO200238754-A1.
XX
PD 16-MAY-2002.
XX
PF 12-NOV-2001; 2001WO-JP09858.
XX
PR 10-NOV-2000; 2000JP-0343921.
XX
PA (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI Koga J, Nakane A, Baba Y, Kono T;
XX
DR WPI; 2002-471555/50.
XX
PT Cellulase preparations containing transconjugant-originated
PT endoglucanase and non-ionic surfactants, useful in detergent
PT compositions, in treating cellulose fibers and deinking waste paper and
PT improving freeness of paper pulp -
XX
PS Claim 3; Page 23-24; 38pp; Japanese.
XX
CC The invention relates to a cellulase preparation comprising a
CC transconjugant-originated endoglucanase and a non-ionic surfactant. The
CC endoglucanase is selected from RCEI, RCEII, RCEII, MCEI, MCEII or PCEI
CC proteins. The preparations are useful in detergent compositions, in
CC treating cellulose fibers and deinking waste paper and improving the
CC freeness of paper pulp. The fibers treated by the preparations have
CC reduced feathering and improved skin-feel and appearance with colour
CC clarification, local change in colour and softening, and after deinking
CC and paper pulp treatment, there is an improvement on freeness of the
CC paper pulp. This treatment with the cellulase preparation can be operated
CC at significantly lower cost. The present sequence represents the
CC R. oryzae CP96001 RCEII protein.
XX
SQ Sequence 366 AA;

Query Match 68.1%; Score 1332; DB 23; Length 366;
Best Local Similarity 66.4%; Pred. No. 3.1e-86;
Matches 249; Conservative 39; Mismatches 63; Indels 24; Gaps 5;

```
Qy          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60
              |||:|| |||:||||:||||| ||:||| | |||||:|:||||||||||     | :||
Db          1 MKFITITSSALLALALGTEMASAAKCSKLYGQCGGKDWNGPTCCESGSTC--KVSNDYYS 58

Qy         61 QCVPNENLTSTNKSS-------------HKTTTTESAKKTTTTKGSKKTTTTEASKKTT 106
              ||:  |  :: ||||             :  |  ||     :           |
Db         59 QCLAPE--SNGNKSSECSKLYGQCGGKDWNGPTCCESGSTCKVSNDYYSQCLAPESNGNK 116

Qy        107 TTEASKKTTTTEASKKTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCK 166
              |:|:: ||||| |  |  ||| ||| |::||       || |||||||| ||||||||
Db        117 TSESAHKTTTTTAPAKEITTTAKASNSSNSSG-----KYSIVSGGASGNGVTTRYWDCCK 171

Qy        167 PSCSWPGKADVTSPVGSCNKDGKT-LADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFA 225
              ||||||||:|:||| |||||| | |:|:| |:|| ||:|| |||||| |:|:||||||
Db        172 ASCSWPGKANVSSPVKSCNKDGVTALSDSNVQSGCNGGNSYMCNDNQPWAVNDNLAYGFA 231

Qy        226 AASISGGSEATWCCACFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVG 285
              ||:|||| |: |||:|||||||||:| |||||:|||||| ||||:|||||||||||||||
Db        232 AAAISGGGESRWCCSCFELTFTSTSVAGKKMVIQVTNTGGDLGSSTGAHFDLQMPGGGVG 291

Qy        286 IYNGCATQWGAPTDGWGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQV 345
              |:|||: ||||| |||||:||||:|||||||:||||||||||||| ||||||||:||||:|
Db        292 IFNGCSKQWGAPNDGWGSRYGGISSASDCSSLPSALQAGCKWRFNWFKNADNPSMTYKEV 351

Qy        346 TCPKAITAKSGCSRK 360
              |||| ||||:|||||
Db        352 TCPKEITAKTGCSRK 366
```

RESULT 10
AAB09824
ID AAB09824 standard; Protein; 338 AA.
XX
AC AAB09824;
XX
DT 25-SEP-2000 (first entry)
XX
DE Endoglucanase protein sequence 4.
XX
KW Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KW animal foodstuff.
XX

OS Mucor circinelloides.
XX
PN WO200024879-A1.
XX
PD 04-MAY-2000.
XX
PF 25-OCT-1999; 99WO-JP05884.
XX
PR 23-OCT-1998; 98JP-0302387.
XX
PA (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
XX
DR WPI; 2000-365117/31.
DR N-PSDB; AAA62729.
XX
PT Endoglucanases of fungal origin with high activity under alkaline
PT conditions for production of paper pulp and animal feedstuffs -
XX
PS Claim 44; Page 120-122; 180pp; Japanese.
XX
CC This sequence represents an endoglucanase protein. The invention relates
CC to an endoglucanase of fungal origin which can completely break down
CC purified cellulose at a concentration of less than 1mg protein/litre,
CC and produces more than 50% breakdown of cellulose at pH 8.5. The
CC invention includes endoglucanase protein sequences (see
CC AAB09825-B09830), endoglucanase nucleotide sequences (see
CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC identification of the endoglucanase sequences, and in the construction of
CC vectors containing the polynucleotides. The endoglucanase enzymes are
CC used for the production of pulp for papermaking and for the production of
CC animal foodstuffs.
XX
SQ Sequence 338 AA;

Query Match 61.8%; Score 1209; DB 21; Length 338;
Best Local Similarity 61.1%; Pred. No. 1.4e-77;
Matches 220; Conservative 42; Mismatches 76; Indels 22; Gaps 5;

```
Qy          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60
              |||    :|  :|||: :  | || ||  | ||||  | ||||||||||||    | :||
Db          1 MKFTVAITSIAVALALSSS-AEAASCSSVYGQCGGIGWSGPTCCESGSTCVAQEGNKYYS 59

Qy         61 QCVPNENLTSTNKSSHKTTTTESAKKTTTTKGSKKTTTTEASKKTTTTEASKKTTTTEAS 120
              ||:|  :  :   :|       | |||:|    | :|||  :  | ||:   |||
Db         60 QCLPGSHSNNAGNAS-------STKKTST----KTSTTTAKATATVTTKTVTKTT----- 103

Qy        121 KKTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180
                | |||| ::|: :|:|:|:|  |  :||| ||:| ||||||||| |||||||| || |
Db        104 --TKTTTKTSTTAAASTSTSSSAGYKVISGGKSGSGSTTRYWDCCKASCSWPGKASVTGP 161

Qy        181 VGSCNKDGKTLADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFAAASISGGSEATWCCA 240
              | :|  :| :| | | |:|| ||: : ||:|||| |:|:|||||||||:| :|| |||
Db        162 VDTCASNGISLLDANAQSGCNGGNGFMCNNNQPWAVNDELAYGFAAASIAGSNEAGWCCG 221

Qy        241 CFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTDG 300
              |:|||||| |  |||||||||||| |||||   |||||||||||||:|||| |||||  ||
Db        222 CYELTFTSGAASGKKMVVQVTNTGGDLGSN---HFDLQMPGGGVGIFNGCAAQWGAPNDG 278

Qy        301 WGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSRK 360
              |||||||||| |||::|||||||||||||| ||||:||||||:|:||||  :| :||| ||
Db        279 WGARYGGVSSVSDCASLPSALQAGCKWRFNWFKNSDNPTMTFKEVTCPAELTTRSGCERK 338
```

RESULT 11
AAO15055
ID AAO15055 standard; Protein; 338 AA.
XX
AC AAO15055;
XX
DT 22-AUG-2002 (first entry)
XX
DE Rhizopus arrhizus endoglucanase-related protein 4.
XX
KW Zygomycetes-originated endoglucanase; cellulose binding domain;
KW fibre processing; waste paper de-inking; paper pulp.
XX
OS Mucor circinelloides.
XX
PN WO200242474-A1.
XX
PD 30-MAY-2002.
XX
PF 21-NOV-2001; 2001WO-JP10188.
XX
PR 21-NOV-2000; 2000JP-0354296.
XX
PA (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakane A, Baba Y, Koga J, Kubota H;
XX
DR WPI; 2002-471729/50.
DR N-PSDB; AAL43247.
XX
PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT with effect of endoglucanase activity enhanced in processing fibers,
PT deinking waste paper and improving freeness of paper pulp -
XX
PS Claim 5; Page 68-70; 109pp; Japanese.
XX
CC The invention comprises the amino acid and coding sequences of
CC zygomycetes-originated endoglucanase enzymes lacking the cellulose
CC binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC invention have enhanced endoglucanase activity. The zygomycetes-
CC originated endoglucanase enzymes of the invention are useful for
CC processing fibres, de-inking waste paper and improving the freeness of
CC paper pulp - which is particularly applicable in detergent compositions.
CC The present amino acid sequence represents an endoglucanase-related
CC protein of the invention.
XX
SQ Sequence 338 AA;

Query Match 61.8%; Score 1209; DB 23; Length 338;
Best Local Similarity 61.1%; Pred. No. 1.4e-77;
Matches 220; Conservative 42; Mismatches 76; Indels 22; Gaps 5;

```
Qy          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60
              |||    :|  :|||: :  | || ||  | ||||  | ||||||||||||    | :||
Db          1 MKFTVAITSIAVALALSSS-AEAASCSSVYGQCGGIGWSGPTCCESGSTCVAQEGNKYYS 59

Qy         61 QCVPNENLTSTNKSSHKTTTTESAKKTTTTKGSKKTTTTEASKKTTTTEASKKTTTTEAS 120
              ||:|  :  :   :|       | |||:|    | :|||  :  | ||:   |||
Db         60 QCLPGSHSNNAGNAS-------STKKTST----KTSTTTAKATATVTTKTVTKTT----- 103

Qy        121 KKTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180
                | |||| ::|: :|:|:|:|  |  :||| ||:| ||||||||| |||||||| || |
Db        104 --TKTTTKTSTTAAASTSTSSSAGYKVISGGKSGSGSTTRYWDCCKASCSWPGKASVTGP 161

Qy        181 VGSCNKDGKTLADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFAAASISGGSEATWCCA 240
              | :|  :| :| | | |:|| ||: : ||:|||| |:|:|||||||||:| :|| |||
Db        162 VDTCASNGISLLDANAQSGCNGGNGFMCNNNQPWAVNDELAYGFAAASIAGSNEAGWCCG 221

Qy        241 CFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTDG 300
              |:|||||| |  |||||||||||| |||||   |||||||||||||:|||| |||||  ||
Db        222 CYELTFTSGAASGKKMVVQVTNTGGDLGSN---HFDLQMPGGGVGIFNGCAAQWGAPNDG 278

Qy        301 WGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSRK 360
              |||||||||| |||::|||||||||||||| ||||:||||||:|:||||  :| :||| ||
Db        279 WGARYGGVSSVSDCASLPSALQAGCKWRFNWFKNSDNPTMTFKEVTCPAELTTRSGCERK 338
```

RESULT 12
ABB08063
ID ABB08063 standard; protein; 338 AA.

XX
AC ABB08063;
XX
DT 27-AUG-2002 (first entry)
XX
DE M. circinelloides CP99001 MCEI protein.
XX
KW Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;
KW pulp treatment; MCEI.
XX
OS Mucor circinelloides.
XX
FH Key Location/Qualifiers
FT Peptide 1..22
FT /note= "signal peptide"
FT Protein 23..338
FT /note= "mature protein"
XX
PN WO200238754-A1.
XX
PD 16-MAY-2002.
XX
PF 12-NOV-2001; 2001WO-JP09858.
XX
PR 10-NOV-2000; 2000JP-0343921.
XX
PA (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI Koga J, Nakane A, Baba Y, Kono T;
XX
DR WPI; 2002-471555/50.
XX
PT Cellulase preparations containing transconjugant-originated
PT endoglucanase and non-ionic surfactants, useful in detergent
PT compositions, in treating cellulose fibers and deinking waste paper and
PT improving freeness of paper pulp -
XX
PS Claim 3; Page 27-29; 38pp; Japanese.
XX
CC The invention relates to a cellulase preparation comprising a
CC transconjugant-originated endoglucanase and a non-ionic surfactant. The
CC endoglucanase is selected from RCEI, RCEII, RCEII, MCEI, MCEII or PCEI
CC proteins. The preparations are useful in detergent compositions, in
CC treating cellulose fibers and deinking waste paper and improving the
CC freeness of paper pulp. The fibers treated by the preparations have
CC reduced feathering and improved skin-feel and appearance with colour
CC clarification, local change in colour and softening, and after deinking
CC and paper pulp treatment, there is an improvement on freeness of the
CC paper pulp. This treatment with the cellulase preparation can be operated
CC at significantly lower cost. The present sequence represents the
CC M. circinelloides CP99001 MCEI protein.
XX
SQ Sequence 338 AA;

Query Match 61.8%; Score 1209; DB 23; Length 338;
Best Local Similarity 61.1%; Pred. No. 1.4e-77;
Matches 220; Conservative 42; Mismatches 76; Indels 22; Gaps 5;

```
Qy          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60
              |||    :|  :|||: :  | || ||  | ||||  | ||||||||||||'    | :||
Db          1 MKFTVAITSIAVALALSSS-AEAASCSSVYGQCGGIGWSGPTCCESGSTCVAQEGNKYYS 59

Qy         61 QCVPNENLTSTNKSSHKTTTTESAKKTTTTKGSKKTTTTEASKKTTTTEASKKTTTTEAS 120
              ||:|  :  :  :|       | |||:|    | :|||  :  | ||:   |||
Db         60 QCLPGSHSNNAGNAS-------STKKTST----KTSTTTAKATATVTTKTVTKTT----- 103

Qy        121 KKTTTTTKKASTSTSSSSSSASTNYSAVSGGASGNGETTRYWDCCKPSCSWPGKADVTSP 180
                | |||| ::|: :|:|:|:|  |  :||| ||:| |||||||| |||||||| || |
Db        104 --TKTTTKTSTTAAASTSTSSSAGYKVISGGKSGSGSTTRYWDCCKASCSWPGKASVTGP 161

Qy        181 VGSCNKDGKTLADNNTQNGCVGGSSYTCNDNQPWVVSDDLAYGFAAASISGGSEATWCCA 240
              | :|  :| :| | | |:|| ||: : ||:|||| |:|:|||||||||:| :|| |||
Db        162 VDTCASNGISLLDANAQSGCNGGNGFMCNNNQPWAVNDELAYGFAAASIAGSNEAGWCCG 221
```

```
Qy        241 CFELTFTSTAVKGKKMVVQVTNTGSDLGSNTGAHFDLQMPGGGVGIYNGCATQWGAPTDG 300
              |:|||||| |  |||||||||||| |||||    |||||||||||||:|||| ||||| ||
Db        222 CYELTFTSGAASGKKMVVQVTNTGGDLGSN---HFDLQMPGGGVGIFNGCAAQWGAPNDG 278

Qy        301 WGARYGGVSSASDCSNLPSALQAGCKWRFGWFKNADNPTMTYKQVTCPKAITAKSGCSRK 360
              |||||||||| |||::|||||||||||||| ||||:||||||:|:||||  :| :||| ||
Db        279 WGARYGGVSSVSDCASLPSALQAGCKWRFNWFKNSDNPTMTFKEVTCPAELTTRSGCERK 338
```

RESULT 13
AAB09825
ID AAB09825 standard; Protein; 387 AA.
XX
AC AAB09825;
XX
DT 25-SEP-2000 (first entry)
XX
DE Endoglucanase protein sequence 5.
XX
KW Endoglucanase; cellulose breakdown; produce pulp; papermaking;
KW animal foodstuff.
XX
OS Phycomyces nitens.
XX
PN WO200024879-A1.
XX
PD 04-MAY-2000.
XX
PF 25-OCT-1999; 99WO-JP05884.
XX
PR 23-OCT-1998; 98JP-0302387.
XX
PA (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakamura Y, Moriya T, Baba Y, Yanai K, Sumida N, Nishimura T;
PI Murashima K, Nakane A, Yaguchi T, Koga J, Murakami T, Kono T;
XX
DR WPI; 2000-365117/31.
DR N-PSDB; AAA62730.
XX
PT Endoglucanases of fungal origin with high activity under alkaline
PT conditions for production of paper pulp and animal feedstuffs -
XX
PS Claim 44; Page 125-127; 180pp; Japanese.
XX
CC This sequence represents an endoglucanase protein. The invention relates
CC to an endoglucanase of fungal origin which can completely break down
CC purified cellulose at a concentration of less than 1mg protein/litre,
CC and produces more than 50% breakdown of cellulose at pH 8.5. The
CC invention includes endoglucanase protein sequences (see
CC AAB09825-B09830), endoglucanase nucleotide sequences (see
CC AAA62726-A62732) and primers (AAA62733-A62802) which are used in the
CC identification of the endoglucanase sequences, and in the construction of
CC vectors containing the polynucleotides. The endoglucanase enzymes are
CC used for the production of pulp for papermaking and for the production of
CC animal foodstuffs.
XX
SQ Sequence 387 AA;

Query Match 61.1%; Score 1195.5; DB 21; Length 387;
Best Local Similarity 56.2%; Pred. No. 1.4e-76;
Matches 221; Conservative 47; Mismatches 86; Indels 39; Gaps 6;

```
Qy          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60
              |||    :|  :|||: :  | || ||  | ||||  | |||||::||||    || :||
Db          1 MKFTVAITSIAVALALSSS-AEAASCSSVYGQCGGIGWTGPTCCDAGSTCKAQKDNKYYS 59

Qy         61 QCVPNENLTSTNKSSHKT-----------TTTESAKKTTTTKGSK-------------- 94
              ||:|    :|:: |                | ||       :|:|
Db         60 QCIPKPKGSSSSSSCSSVYSQCGGIGWSGPTCCESGSTCVAQEGNKYYSQCLPGSHSNNA 119

Qy         95 ------KTTTTEASKKTTTTEASKKTTTTEASKKTT-TTTKKASTSTSSSSSSASTNYSA 147
```

```
                  | |:|: |  ||| :|:  ||   :| || |||| ::|: :|:|:|:|  |
Db        120 GNASSTKKTSTKTS--TTTAKATATVTTKTVTKTTTKTTTKTSTTAAASTSTSSSAGYKV 177

Qy        148 VSGGASGNGETTRYWDCCKPSCSWPGKADVTSPVGSCNKDGKTLADNNTQNGCVGGSSYT 207
              :||| ||:| |||||||| |||||||| || || :|  :| :| | | |:|| ||: :
Db        178 ISGGKSGSGSTTRYWDCCKASCSWPGKASVTGPVDTCASNGISLLDANAQSGCNGGNGFM 237

Qy        208 CNDNQPWVVSDDLAYGFAAASISGGSEATWCCACPELTFTSTAVKGKKMVVQVTNTGSDL 267
              ||:|||| |:|:|||||||||:| :|| ||| |:|||||  |  ||||||||||| ||
Db        238 CNNNQPWAVNDELAYGFAAASIAGSNEAGWCCGCYELTFTSGAASGKKMVVQVTNTGGDL 297

Qy        268 GSNTGAHFDLQMPGGGVGIYNGCATQWGAPTDGWGARYGGVSSASDCSNLPSALQAGCKW 327
              |||   |||||||||||||:|||| ||||| |||||||||||| |||::|||||||||||
Db        298 GSN---HFDLQMPGGGVGIFNGCAAQWGAPNDGWGARYGGVSSVSDCASLPSALQAGCKW 354

Qy        328 RFGWFKNADNPTMTYKQVTCPKAITAKSGCSRK 360
              || ||||:||||||:|:||||  :| :||| ||
Db        355 RFNWFKNSDNPTMTFKEVTCPAELTTRSGCERK 387
```

RESULT 14
AAO15056
ID AAO15056 standard; Protein; 387 AA.
XX
AC AAO15056;
XX
DT 22-AUG-2002 (first entry)
XX
DE Rhizopus arrhizus endoglucanase-related protein 5.
XX
KW Zygomycetes-originated endoglucanase; cellulose binding domain;
KW fibre processing; waste paper de-inking; paper pulp.
XX
OS Mucor circinelloides.
XX
PN WO200242474-A1.
XX
PD 30-MAY-2002.
XX
PF 21-NOV-2001; 2001WO-JP10188.
XX
PR 21-NOV-2000; 2000JP-0354296.
XX
PA (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI Nakane A, Baba Y, Koga J, Kubota H;
XX
DR WPI; 2002-471729/50.
DR N-PSDB; AAL43248.
XX
PT Cellulose-binding domain-lacking Zygomycetes-originated endoglucanase,
PT with effect of endoglucanase activity enhanced in processing fibers,
PT deinking waste paper and improving freeness of paper pulp -
XX
PS Claim 5; Page 73-75; 109pp; Japanese.
XX
CC The invention comprises the amino acid and coding sequences of
CC zygomycetes-originated endoglucanase enzymes lacking the cellulose
CC binding domain. The zygomycetes-originated endoglucanase enzymes of the
CC invention have enhanced endoglucanase activity. The zygomycetes-
CC originated endoglucanase enzymes of the invention are useful for
CC processing fibres, de-inking waste paper and improving the freeness of
CC paper pulp - which is particularly applicable in detergent compositions.
CC The present amino acid sequence represents an endoglucanase-related
CC protein of the invention.
XX
SQ Sequence 387 AA;

Query Match 61.1%; Score 1195.5; DB 23; Length 387;
Best Local Similarity 56.2%; Pred. No. 1.4e-76;
Matches 221; Conservative 47; Mismatches 86; Indels 39; Gaps 6;

```
Qy          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60
                |||    :|  :|||: :  | || ||  | ||||  | |||||::||||    || :||
Db          1 MKFTVAITSIAVALALSSS-AEAASCSSVYGQCGGIGWTGPTCCDAGSTCKAQKDNKYYS 59

Qy         61 QCVPNENLTSTNKSSHKT------------TTTESAKKTTTTKGSK-------------- 94
              ||:|   :|:: |                 |  ||       :|:|
Db         60 QCIPKPKGSSSSSSCSSVYSQCGGIGWSGPTCCESGSTCVAQEGNKYYSQCLPGSHSNNA 119

Qy         95 ------KTTTTEASKKTTTTEASKKTTTTEASKKTT-TTTKKASTSTSSSSSSASTNYSA 147
                   | |:|: |  ||| :|:   ||   :| || |||| ::|: :|:|:|:|  |
Db        120 GNASSTKKTSTKTS--TTTAKATATVTTKTVTKTTTKTTTKTSTTAAASTSTSSSAGYKV 177

Qy        148 VSGGASGNGETTRYWDCCKPSCSWPGKADVTSPVGSCNKDGKTLADNNTQNGCVGGSSYT 207
              :||| ||:| |||||||| |||||||| || || :|  :| :| | | |:|| ||: :
Db        178 ISGGKSGSGSTTRYWDCCKASCSWPGKASVTGPVDTCASNGISLLDANAQSGCNGGNGFM 237

Qy        208 CNDNQPWVVSDDLAYGFAAASISGGSEATWCCACPELTFTSTAVKGKKMVVQVTNTGSDL 267
              ||:|||| |:|:|||||||||:| :|| ||| |:|||||  |  ||||||||||| ||
Db        238 CNNNQPWAVNDELAYGFAAASIAGSNEAGWCCGCYELTFTSGAASGKKMVVQVTNTGGDL 297

Qy        268 GSNTGAHFDLQMPGGGVGIYNGCATQWGAPTDGWGARYGGVSSASDCSNLPSALQAGCKW 327
              |||   |||||||||||||:|||| ||||| |||||||||||| |||::|||||||||||
Db        298 GSN---HFDLQMPGGGVGIFNGCAAQWGAPNDGWGARYGGVSSVSDCASLPSALQAGCKW 354

Qy        328 RFGWFKNADNPTMTYKQVTCPKAITAKSGCSRK 360
              || ||||:||||||:|:||||  :| :||| ||
Db        355 RFNWFKNSDNPTMTFKEVTCPAELTTRSGCERK 387
```

RESULT 15
ABB08064
ID ABB08064 standard; protein; 387 AA.
XX
AC ABB08064;
XX
DT 27-AUG-2002 (first entry)
XX
DE M. circinelloides CP99001 MCEII protein.
XX
KW Cellulase; endoglucanase; surfactant; detergent; cellulose; paper;
KW pulp treatment; MCEII.
XX
OS Mucor circinelloides.
XX
FH Key Location/Qualifiers
FT Peptide 1..22
FT /note= "signal peptide"
FT Protein 23..387
FT /note= "mature protein"
XX
PN WO200238754-A1.
XX
PD 16-MAY-2002.
XX
PF 12-NOV-2001; 2001WO-JP09858.
XX
PR 10-NOV-2000; 2000JP-0343921.
XX
PA (MEIJ ) MEIJI SEIKA KAISHA LTD.
XX
PI Koga J, Nakane A, Baba Y, Kono T;
XX
DR WPI; 2002-471555/50.
XX
PT Cellulase preparations containing transconjugant-originated
PT endoglucanase and non-ionic surfactants, useful in detergent
PT compositions, in treating cellulose fibers and deinking waste paper and
PT improving freeness of paper pulp -
XX
PS Claim 3; Page 29-31; 38pp; Japanese.
XX
CC The invention relates to a cellulase preparation comprising a
CC transconjugant-originated endoglucanase and a non-ionic surfactant. The
CC endoglucanase is selected from RCEI, RCEII, RCEII, MCEI, MCEII or PCEI

CC proteins. The preparations are useful in detergent compositions, in
CC treating cellulose fibers and deinking waste paper and improving the
CC freeness of paper pulp. The fibers treated by the preparations have
CC reduced feathering and improved skin-feel and appearance with colour
CC clarification, local change in colour and softening, and after deinking
CC and paper pulp treatment, there is an improvement on freeness of the
CC paper pulp. This treatment with the cellulase preparation can be operated
CC at significantly lower cost. The present sequence represents the
CC M. circinelloides CP99001 MCEII protein.
XX
SQ Sequence 387 AA;

Query Match 61.1%; Score 1195.5; DB 23; Length 387;
Best Local Similarity 56.2%; Pred. No. 1.4e-76;
Matches 221; Conservative 47; Mismatches 86; Indels 39; Gaps 6;

```
Qy          1 MKFLTIASSAILALAVGTEMAHAAECSKAYYQCGGKNWDGPTCCESGSTCVDYPDNPFYS 60
              |||    :|  :|||: :  | || ||  | ||||  | |||||::||||    || :||
Db          1 MKFTVAITSIAVALALSSS-AEAASCSSVYGQCGGIGWTGPTCCDAGSTCKAQKDNKYYS 59

Qy         61 QCVPNENLTSTNKSSHKT-----------TTTESAKKTTTTKGSK-------------- 94
              ||:|    :|:: |              |  ||        :|:|
Db         60 QCIPKPKGSSSSSSCSSVYSQCGGIGWSGPTCCESGSTCVAQEGNKYYSQCLPGSHSNNA 119

Qy         95 ------KTTTTEASKKTTTTEASKKTTTTEASKKTT-TTTKKASTSTSSSSSSASTNYSA 147
                  | |:|: |  ||| :|:   ||   :| || |||| ::|: :|:|:|:|  |
Db        120 GNASSTKKTSTKTS--TTTAKATATVTTKTVTKTTTKTTTKTSTTAAASTSTSSSAGYKV 177

Qy        148 VSGGASGNGETTRYWDCCKPSCSWPGKADVTSPVGSCNKDGKTLADNNTQNGCVGGSSYT 207
              :||| ||:| ||||||||| |||||||| || || :|  :| :| | | |:|| |: :
Db        178 ISGGKSGSGSTTRYWDCCKASCSWPGKASVTGPVDTCASNGISLLDANAQSGCNGGNGFM 237

Qy        208 CNDNQPWVVSDDLAYGFAAASISGGSEATWCCACFELTFTSTAVKGKKMVVQVTNTGSDL 267
              ||:|||| |:|:|||||||||:| :|| .||| |:|||||| |  |||||||||||| ||
Db        238 CNNNQPWAVNDELAYGFAAASIAGSNEAGWCCGCYELTFTSGAASGKKMVVQVTNTGGDL 297

Qy        268 GSNTGAHFDLQMPGGGVGIYNGCATQWGAPTDGWGARYGGVSSASDCSNLPSALQAGCKW 327
              |||   |||||||||||||:|||| ||||| |||||||||||| |||::|||||||||||
Db        298 GSN---HFDLQMPGGGVGIFNGCAAQWGAPNDGWGARYGGVSSVSDCASLPSALQAGCKW 354

Qy        328 RFGWFKNADNPTMTYKQVTCPKAITAKSGCSRK 360
              || ||||:||||||:|:|||| :| :||| ||
Db        355 RFNWFKNSDNPTMTFKEVTCPAELTTRSGCERK 387
```

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Job time : 40.4567 secs